UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,136	12/03/2003	Marco Ranalli	60130-1978	5317

26096 7590 07/27/2005

CARLSON, GASKEY & OLDS, P.C.
400 WEST MAPLE ROAD
SUITE 350
BIRMINGHAM, MI 48009

EXAMINER	
NGUYEN, TU MINH	

ART UNIT	PAPER NUMBER
3748	

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/727,136	RANALLI ET AL.	
	Examiner	Art Unit	
	Tu M. Nguyen	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,8-10,13,15-19,22 and 23* is/are rejected.

7)☒ Claim(s) *6,7,11,12,14,20 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. An Applicant's Amendment filed on May 10, 2005 has been entered. Claims 1-20 have been amended; and claims 21-23 have been added. Overall, claims 1-23 are pending in this application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4, 13, 16-19, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (U.S. Patent 6,260,353) in view of Kupe et al. (U.S. Patent 6,832,473).

Re claims 1, 2, and 22, as shown in Figure 1, Takahashi discloses an exhaust system for a diesel propulsion engine comprising:

- a pre-tube (26) adapted for connection to a manifold (24);

- a discontinuously regenerating exhaust gas purification system including a catalytic converter unit (28) that burns diesel fuel catalytically and is connected to the pre-tube (26);

- a fuel evaporator unit (44) connected upstream from the catalytic converter unit including an electrical heating element, wherein the fuel evaporator unit is adapted for connection to a vehicle fuel tank (18) by a fuel line (42) and installed with spatial separation from an exhaust gas-carrying component (26);

- a fuel vapor (32) feeding channel upstream of the catalytic converter unit, wherein the fuel vapor feeding channel discharges into the exhaust gas carrying component, and extends between the fuel evaporator unit (44) and the exhaust gas carrying component (26); and

- a controller (46) controlling delivery of fuel to the fuel evaporator unit to periodically regenerate the catalytic converter unit.

Takahashi, however, fails to disclose that the system further comprises a discontinuously regenerating particulate filter and an oxidizing converter unit connected upstream of the particulate filter.

As illustrated in Figure 1, Kupe et al. teach an exhaust gas purification system comprising a discontinuously regenerating particulate filter (36) and an oxidizing converter unit (34) connected upstream of the particulate filter, wherein the oxidizing converter unit heats up the exhaust gases flowing toward the particulate filter through catalytic combustion of a reductant. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the exhaust gas purification system taught by Kupe et al. in the system of Takahashi, since the use thereof would have provided an effective means to remove harmful particulate matter from the exhaust gas.

Re claim 3, in the modified system of Takahashi, the exhaust gas purification system further includes a discontinuously regenerating NOx accumulating converter ((32) in Kupe et al.).

Re claim 4, in the modified system of Takahashi, the fuel vapor feeding channel discharges into a cross-sectional restriction of the exhaust gas carrying component.

Re claim 13, in the modified system of Takahashi, the fuel evaporator unit comprises a pressure vessel having a heating device, and two valves (20, 34) control flow through the fuel evaporator unit.

Re claims 16-17, in the modified system of Takahashi, the oxidizing converter unit and the discontinuously regenerating particulate filter are installed in separate housings or are installed in a common housing (see Kupe et al.).

Re claim 18, in the modified system of Takahashi, the oxidizing converter unit is represented by a catalytically coated area of the discontinuously regenerating particulate filter.

Re claim 19, the modified system of Takahashi discloses the invention as cited above, however, fails to disclose that the system further includes a temperature sensor located between the oxidizing converter unit and the discontinuously regenerating particulate filter.

It is well known to those with ordinary skill in the art that the system in Kupe et al. includes a temperature sensor located between the oxidizing converter unit and the particulate filter and connected to a controller which in the regeneration mode controls the delivery rate of a fuel pump that feeds the fuel reformer depending on an exhaust gas temperature measured

upstream of the particulate filter. Therefore, such disclosure by Kupe et al. is notoriously well known in the art so as to be proper for official notice.

Re claim 23, the modified system of Takahashi includes a switch adapted to connect the fuel evaporator unit (44) to a power source (not number but clearly shown in Figure 1), wherein the switch is controlled by the controller to initiate a regeneration mode.

4. Claims 5 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Kupe et al. as applied to claim 1 above, and further in view of van Nieuwstadt et al. (U.S. Patent 6,834,498).

Re claim 5, the modified system of Takahashi discloses the invention as cited above, however, fails to disclose that the system further includes a jacket tube, and wherein the fuel evaporator unit comprises an upright mounted glow plug which is encompassed by the jacket tube to define an annular gap, and the fuel line and the fuel vapor feeding channel discharge into the annular gap.

As depicted in Figure 3A, van Nieuwstadt et al. teach that it is conventional in the art to utilize an aftertreatment system comprising a heated evaporator unit (21) having a jacket tube, wherein the evaporator unit comprises an upright mounted glow plug (22) which is encompassed by the jacket tube to define an annular gap, and the fuel line and the fuel vapor feeding channel discharge into the annular gap. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the evaporator unit taught by van Nieuwstadt et al. in the modified system of Takahashi, since the use thereof would have been routinely utilized by those with ordinary skill in the art.

Re claim 8, in the modified system of Takahashi, an end of the fuel vapor feeding channel oriented toward the fuel evaporator unit extends into the jacket tube.

Re claim 9, the modified system of Takahashi further includes an insulator and wherein the jacket tube is encompassed by the insulator.

Re claim 10, as shown in van Nieuwstadt et al., the fuel evaporator unit in the modified system of Takahashi further comprises a preheating stage (23) connected upstream of the fuel evaporator to evaporate the fuel.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi in view of Kupe et al. as applied to claim 1 above, and further in view of legal precedent.

The modified system of Takahashi discloses an invention as cited above, however, fails to disclose that a ratio of a cross-section of the fuel vapor feeding channel to a cross-section of the exhaust gas carrying component is between 0.006 and 0.015 near an outlet to the fuel vapor feeding channel.

Takahashi discloses the claimed invention except for specifying an optimum value of a ratio of a cross-section of the fuel vapor feeding channel to a cross-section of the exhaust gas carrying component between 0.006 and 0.015 near an outlet to the fuel vapor feeding channel. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a specific optimum value of the ratio of a cross-section of the fuel vapor feeding channel to a cross-section of the exhaust gas carrying component, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Allowable Subject Matter

6. Claims 6, 7, 11, 12, 14, 20, and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments with respect to the reference applied in the previous Office Action have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., in the evaporator unit, the state of matter of the diesel fuel changes from the liquid to the vapor state only and there is no chemical changes of the diesel fuel occurring) (pages 8-9 of Applicant's Amendment) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Communication

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tu M. Nguyen

TMN

July 25, 2005

Tu M. Nguyen

Primary Examiner

Art Unit 3748